



**OUR MISSION:**  
**SPEED UP YOUR R&D PROJECTS**

**YOUR PARTNER FOR THE  
DEVELOPMENT OF:**

- ✓ **POWERTRAINS**
- ✓ **TRANSMISSIONS**
- ✓ **LUBRICANTS**
- ✓ **TEST RIGS**
- ✓ **FLUID  
CONDITIONING  
UNITS**
- ✓ **HYDROGEN  
PROJECTS**

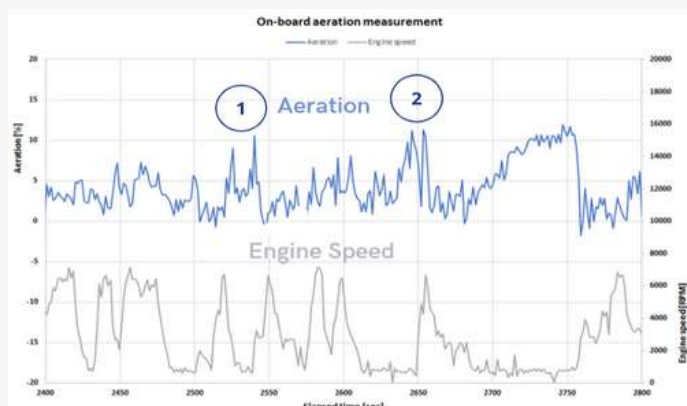
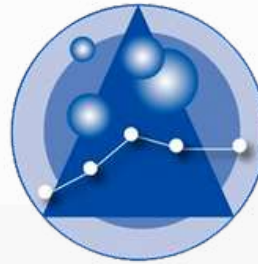
**OUR PRODUCT RANGE 2025**

# AIR-X FOR OIL AERATION MEASUREMENT



SUPER COMPACT AIR-X

- Real-time results
- 0 -100% measuring range
- Self-calibration
- On-board model available
- A worldwide reference in the automotive and aeronautic industries





# INNOVATIVE TOOLS FOR THE DEVELOPMENT OF POWERTRAINS AND TRANSMISSIONS



- Optimisation of lubrication and cooling
- Impact of oil aeration
- Real-time Wear measurement
- Friction losses measurement
- Development of de-aeration systems





# POWERTRAIN TEST SERVICES

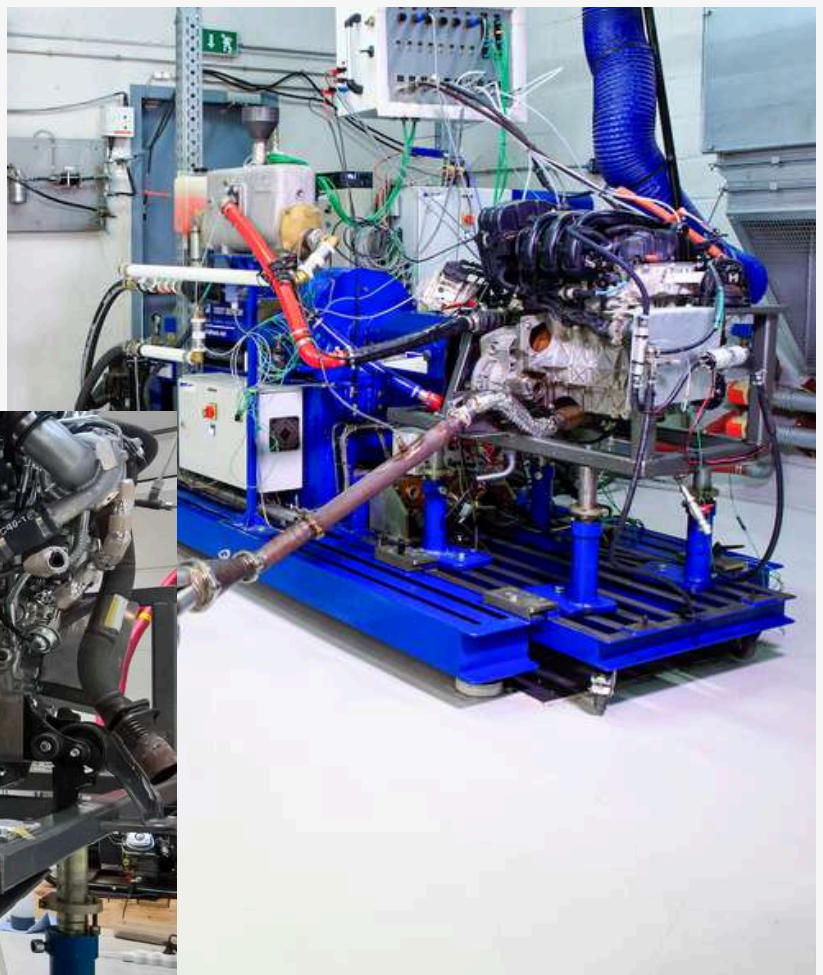


Real-time technologies for measurement of:

- Wear
- Friction losses
- Oil consumption
- Fuel dilution
- Oil aeration



5 test cells equipped with  
radiotracer tools for  
real-time measurements.



# DEVELOPMENT OF TEST RIGS AND FLUID CONDITIONING SYSTEMS



- Taylor made Test Rigs & Benches
- Oil and water conditioning units
- Oil Aeration Generators
- Temperature range up to 300°C
- Up to 400L/min. / 20 bars
- PLC controlled with HMI
- EC and US certification







## FLUID CONDITIONING UNIT FOR ACCELERATED OIL AGING

The innovative tool to accelerate  
lubricant aging and investigate  
their change of properties

[WWW.FLUCOIL.COM](http://WWW.FLUCOIL.COM)



**FLUCOIL** is designed to study the changes of lubricant properties during their lifetime. This innovative test rig also allows **comparing lubricant formulations** while **speeding-up the aging process**.

The equipment can be programmed to simulate lubricant conditions in real mechanical systems such as internal combustion engines, e-powertrains, gearboxes, industrial transmissions, compressors, and other mechanical systems.

**FLUCOIL** offers the following **functionalities**:

- **Selectable operating temperature** between 0°C and 160°C (up to 250°C as an option)
- Forced **oxydation process** by mixing air to oil at selectable and controlled rates. Injection of other oxyding gases such as NOx is also possible
- Forced **mechanical shear** using gear pumps that are operated at programmable speeds and loads to generate high pressure in the oil circuit, and allow the injected gas to be dissolved
- Possibility to inject continuously fuel or water-based contaminants (coolant) to simulate a **dilution process**
- Possibility to inject soot (black carbon) and / or micrometric **metal debris**





A range of **smart probes** is available to monitor critical parameters such as:

- Viscosity
- Dielectric constant
- Resistivity
- TAN / TBN
- Aeration properties (measurement of dissolved and non-dissolved fractions)
- Concentration in wear debris

Oil samples can also be taken periodically to measure additional oil properties in a laboratory, or to perform tribology tests at different periods during and after the aging process.

*FLUCOIL is equipped with a range of smart probes to investigate oil quality during the aging process.*

## TIME AND ENERGY SAVINGS

Compared to real mechanical systems, **FLUCOIL** reduces significantly test durations and allows saving significant amounts of energy.

The equipment only requires electricity supply.

Energy consumption in the range of 1 kWh per litre of oil and per hour of test.

As test durations are **typically reduced to 50 hours**, this means that less than 250 kWh energy consumption is required to age 5L of lubricant.

## AUTOMATION

**FLUCOIL** is fully PLC controlled.

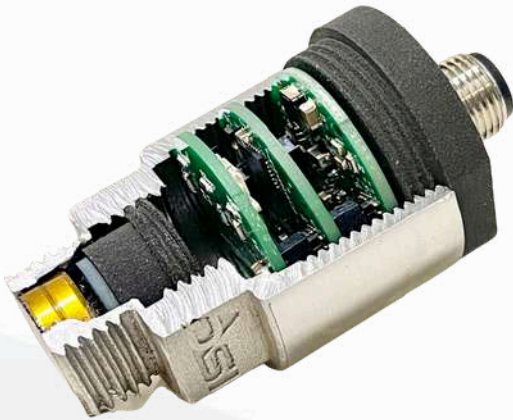
Equipment is operated using a local handheld HMI where operating conditions are easily programmed:

- Test duration
- Number of cycles
- Oil temperature range
- Air/Gas injection rate
- Fuel injection rate





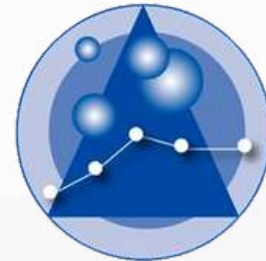
# SMART SENSORS IOT SOLUTIONS FOR PREVENTIVE MAINTENANCE



DSI INNOVATIVE WEAR PROBE  
1- 1000 MICRONS

Smart sensors for oil quality control:

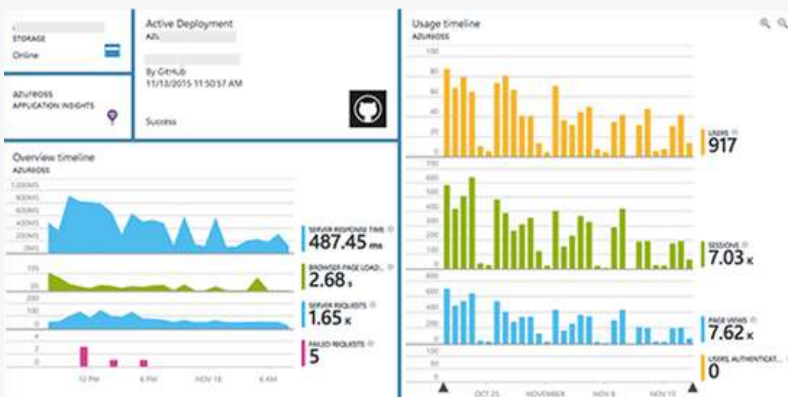
- Viscosity
- Contamination by fuel - water - soot - wear debris
- Dielectric constant
- Resistivity
- Aeration
- TAN / TBN



Off-Road and mining vehicles



Industrial transmissions



Dashboard for real-time process monitoring and trends



Power generators





# CONVERSION OF TEST CELLS FOR THE DEVELOPMENT OF HYDROGEN COMBUSTION ENGINES

DSi develops solutions for implementing hydrogen distribution equipment in test cells for ICE (Internal Combustion Engines).



Our services cover all steps for converting conventional fuel distribution systems to hydrogen, including safety issues:

- **Pre-study:** analysis of your existing test equipment and proposal for implementing a cost-effective solution
- **Risk analysis**
- **Engineering:** selection and implementation of all components piping, valves, pressure regulation, flowmeters, leak detection probes, etc.
- **Safety:** selection and implementation of H<sup>2</sup> detection probes; installation of a dedicated PLC with software for real-time detection of H<sup>2</sup> leaks
- **Upgrade of equipment** already installed in your test cell to minimize accumulation of hydrogen: ventilation system, isolation of electrical distribution cabinets and other electrical equipment
- **Supply of hardware and in-situ installation services**
- **Validation and assistance for accreditation** with local authorities





## DSI PREMISES



Engineering CAD work stations



Production area equipped with machining tools - 3D print



Radiochemistry laboratory



Engine & Lubricant Test Center



Electronics & Automation lab

## SOME REFERENCES





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- SALES & RENT OF EQUIPMENT
- DEVELOPMENT OF TURN-KEY SOLUTIONS
- SERVICE MEASUREMENT AT OUR TEST CENTER
- SERVICE MEASUREMENT AT YOUR FACILITY
- R&D PARTNERSHIPS
- TECHNICAL ASSISTANCE
- TRAINING
- AFTER SALES SERVICES



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